



Reference #1

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY  
DIVISION OF LAND/NOISE POLLUTION CONTROL

GROUNDWATER WITHDRAWALS FROM  
AQUIFERS IN ILLINOIS  
WITH EMPHASIS ON  
PWS WELLS

by  
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## AQUIFERS OF ILLINOIS

Subsequent to consultation with the ISGS and ISWS, the IEPA identified the aquifers in Illinois. These aquifers are shown in descending order in Table B.

Table B. Aquifers of Illinois

Name of aquifers (abbreviation)		General lithology
Quaternary	(Q)	Sands and gravels**
Cretaceous-Tertiary	(K-T)	Sands and gravels**
Pennsylvanian	(Pen)	Sandstones, limestones, and coals**
Chesterian	(MCh)	Sandstones and limestones**
Valmeyeran	(MVa)	Sandstones and limestones
Silurian-Devonian	(S-D)	Dolomites and limestones
*Maquoketa	(Maq)	Dolomites and fractured shales**
Galena-Platteville	(G-P)	Dolomites and limestones
Glenwood-St. Peter	(G-StP)	Sandstones
*Prairie du Chien	(PduC)	Dolomites and sandstones
Eminence-Potosi	(E-P)	Dolomites
*Franconia	(F)	Sandy dolomites
Ironton-Galesville	(I-G)	Sandstones
Elmhurst-Mt. Simon	(E-Mts)	Sandstones

\* Considered of minor importance, refer to text for details

\*\*Rock types listed may be water yielding but generally make up less than half of the total rock thickness in the indicated units.

Properties of these aquifers are briefly described under the heading "Description of Aquifers Utilized by PWS Wells". Their detailed discussion are included in another report entitled "Aquifers of Illinois: Underground Sources of Drinking Water and Non-Drinking Water" by Student et al. (1981). Some of these aquifers are hydrologically connected and are identified as hydrostratigraphic units in parts of the State. One of the best known hydrostratigraphic units in northern Illinois is the Cambrian-Ordovician aquifer which consists of the Ironton-Galesville, Franconia, Eminence-Potosi, Prairie du Chien, Glenwood-St. Peter, and the Galena-Platteville. However, the IEPA has elected to retain individual aquifer designations due to variations in aquifer properties over a statewide basis. The wells in various use categories primarily obtain water from either the individual aquifers in Table B or any combination of them.

As indicated in Table B, three of these aquifers, the Maquoketa, Prairie du Chien, and Franconia are of "minor" importance. In the case of the Maquoketa, lithologic variations from fractured limestone, dolomite, and shales to a predominate shale group, cause a reduction of water yielding capability. Indeed, over a larger portion of Illinois, the Maquoketa is more often considered an aquitard or a confining bed rather than an aquifer. The Prairie du Chien and the Franconia are usually left open to multiple aquifer wells which penetrate to deeper sandstone aquifers. Their respective yields relative to the deeper aquifers, such the Ironton-Galesville and the Elmhurst-Mt. Simon, are of lesser quantities.



Chesterian, Valmeyeran, and Silurian-Devonian are primarily used in single aquifer wells and the remaining aquifers are most often used in multiple aquifer wells.

#### Description of Aquifers Utilized by PWS Wells

The following is a brief discussion of the aquifers open to PWS wells (Tables 1 through 13, and 15, Appendix I). The location of the PWS wells open to a single aquifer is shown on Plates 1 through 12 (Appendix II). These plates also include the areal distribution of aquifers, and the approximate location where formation waters contain 10,000 mg/l TDS. The location of PWS wells open to multiple aquifers is shown on Plate 13.

The aquifers in the State can also be grouped as the sand and gravel aquifers (Quaternary and Cretaceous-Tertiary) and the bedrock aquifers. Quaternary aquifers primarily consist of unconsolidated sand and gravel of glacial origin. The sand and gravel are found in outwash plains, valley trains, and to a limited extent, in till deposits. Along the major streams, the sand and gravel has an alluvial origin. The Quaternary aquifers yield water to wells in most of Illinois. A few PWS wells obtain water from the Cretaceous-Tertiary aquifer in southern Illinois.

The bedrock aquifers, except Pennsylvanian, Valmeyeran, and Chesterian aquifers, are utilized in the northern third of Illinois by PWS wells. Of the bedrock aquifers available, the Silurian-Devonian aquifer provides ground water in three small areas in the central, western, and southern Illinois (TACWR, 1967). The Valmeyeran and Chesterian aquifers are utilized in western and south-southwestern Illinois. Pennsylvanian sandstone aquifers, which are less occurring than the shales in the System, occur in many parts of the State as channel and sheet deposits. Pennsylvanian aquifers have limited use as water supply source due to the mineralized water content at relatively shallow depths and limited well yields.

Where confining layers are missing, the aquifers are hydrologically connected and function as a hydrostratigraphic unit. This situation occurs between the Quaternary and upper bedrock aquifers, as well as Cambrian-Ordovician aquifers in the northern third of the State.

The following is a brief discussion of the aquifers in ascending order:

Elmhurst-Mt. Simon: This aquifer is limited in use at the northern one-fourth of the State and to 200 to 300 feet of depth because water quality degrades at accelerating rates with increased depths and towards the center of the Illinois Basin. No PWS well was found to be withdrawing water from this aquifer alone; however, 106 PWS wells in 10 counties were found to be utilizing this aquifer in combination with



Table 6. Silurian-Devonian aquifer, public water supply wells (con't)

County	Pumping facility	Population (pop./yr)	Average daily pumpage of facility (gpd/yr)	No. of wells	Well location (sec., T/R)	Well depth (feet)	Well yield (gpm)	Remarks
DuPage	Highland Hills Sanitary District (S. of Lombard)	1,225/79	120,000/79	2	20,39N-11E	241	210-250	
	Hinsdale	15,918	2,450,000/77	10	1,11,12,38N- 11E,36,39N-11E	198-353	600-1000	
	Hinsdale Sanitary District (N. of Hinsdale)	600/77	33,000/77	2	36,39N-11E	300	250-300	
	Hinswood Subdiv. (S.W. of Willowbrook)	4,690/78	560,000/78	3 (1)	4,37N-11E 34,38N-11E	284-305	425-800	
	Itasca	4,638	* 758,400/76	3 (1)	8,40N-11E	190-233	275-500	See table 1
	Lake in the Woods Subd. (W. of Darien)	1,910/79	180,000/79	2	33,38N-11E	350	330-400	
	Liberty Park Homeowners Assn. (N. of Westmont)	1,225/79	110,000/79	2	4,38N-11E	278	100-300	
	Liberty Ridge Estates (N.W. of Wheaton)	875/79	54,000/79	1	7,39N-10E	261	330	
	Lisle	5,329	* 555,000/77	3	4,10,38N-10E	193-350	250-1200	See table 13
	Illinois Municipal Water Co. (in Lisle)	1,676/77	143,000/77	2 (1)	3,10,38N-10E	231-233	500	
	Oakview Subd. (in Lisle)	3,412/78	647,000/78	3	11,14,38N-10E	175-284	400-1400	



Table 13. Public water supply wells open to multiple aquifers (con't)

County Pumping facility	Population (pop/yr.) Average daily pumpage (gpd/yr)	Location (Sec,T/R)	No. of wells	Aquifers											Minor aquifers			Well yield(s) (gpm)	Well depth(s) (ft.)	Remarks
				Q	K - T	P e n	M C h	M V a	S - D	G - P	G- St P	E - P	I - G	E- Mt S	M a q	P du C	F			
DuPage																				
Oak Brook	4,164 * 2,798,000/77	24,26,33, 39N-11E	4							2	2	4	4		4	4		980-1200	1458-1522	See table 6
Roselle	6,207 * 902,633/75	9,10,40N- 10E	2	1					1	1	1	1	1			1		800	195-1423	See table 1 and 6
Rosewood Trace Subd. (S. of Willowbrook)	2,975/78 * 280,000/78	2,37N-11E	1							1	1	1	1		1	1		1000	1610	See table 6
Villa Park	25,891 2,187,898/79	4,9,10,16, 39N-11E	6 (2)						2	4	4	4	4		2	4		400-1100	202-1605	
Warrenville	3,281 * 380,000/79	2,3,38N-9E 34,39N-9E	3						3						3			100-450	300-365	See table 6
Warrenville (Ill. Muni. Water Co.)	1,610/77 * 111,500/77	35,39N-9E	1						1						1			220	256	See table 6
W. Chicago	10,111 1,390,000/75	4,5,15, 39N-9E	4 (1)						1	3	4	3	3			3		450-1000	780-1378	
Westmont	8,920 * 300,000/79	10,38N-11E	1							1	1	1	1		1	1		1000	1604	See table 6
Wheaton	31,138 4,500,000/77	9,16,21, 39N-10E	6 (1)	1					6						5			800-2500	183-368	
Willowbrook	1,457 * 250,000/76	23,38N-11E	1							1	1	1	1		1	1		1000	1620	See table 6
Winfield	4,285 * 548,668/77	13,39N-9E	2						2						2			890-900	318-346	See table 6
Wood Dale	8,831 * 854,795/78	10,16,40N- 11E	2							2	2	2	2			2		750-1000	1356-1400	See table 6
Fulton																				
Bryant	326 14,800/77	30,6N-4E	1						1	1								50	1082	
Cuba	1,581 100,000/76	Unknown	1						1	1								200	1380	



Table 13. Public water supply wells open to multiple aquifers (con't)

County Pumping facility	Population (pop./yr.) Average daily pumpage (gpd/yr)	Location (Sec,T/R)	No. of wells	Aquifers											Minor aquifers			Well yield(s) (gpm)	Well depth(s) (ft.)	Remarks
				Q	K - T	P e n	M C h	M V a	S - D	G P	G- St P	E - P	I - G	E- Mt S	M a q	P du C	F			
Cook																				
Mt. Prospect	45,228 * 4,000,000/78	10,11,23, 27,33,34, 35,41N-11E	10							7	9	9	10	9		5	9	500-1600	1310-1961	See table 6
Orland Park	6,391 * 1,833,000/77	13,36N-12E	1							1	1	1	1		1	1		900	1809	See tables 6 and 10
Palatine	26,050 * 4,098,000/77	9,14,15, 22,24,28, 42N-10E	7	1					2	3	3		5	2	1		4	250-1200	162-1960	See table 1.
Riverside	10,432 * 1,000,000/77	25,36,39N- 12E	2							2	2	1	2	2		1		1200-1325	1980-2049	Approximately 5% of pumpage is surface water
Rolling Meadows	19,178 2,200,000/78	7,8,25,26, 34,36,42N- 10E	7							6	6	1	7	2		1	1	500-1000	1528-1602	
Schaumburg	18,730 * 5,306,000/78	10,14,18 34,41N-10E	4						1	4	4			3		4	2	900-1400	1350-1615	See tables 1 and 6
S. Chicago Hts.		29,35N-14E	(1)						1	1	1	1	1	1		1	1	225	2756	See table 6
Streamwood	18,176 * 2,100,000/78	23,41N-9E	1							1	1			1		1	1	500	1410	See table 1
Thornton	3,714 474,000/79	34,36N-14E	2							2	2	2	2			2	2	400-600	1724-1783	
Western Springs	13,029 * 1,398,000/78	5(6),38N- 12E	2							2	2		1	1			2	1000-1260	1256-1913	See table 6
Wheeling	13,243 * 1,800,000/78	3,11,23, 42N-11E	3							3	3			3			3	800-1300	1350-1370	See table 6
DeKalb																				
DeKalb	32,949 3,918,000/76	22,23,40N- 4E	9							2	9	5	9		3		8	495-1331	1200-1330	
Genoa	3,210/75 428,500/77	19,42N-5E	3							3	3							500-1000	730-770	
Hinckley	1,053 115,400/77	15,38N-5E	2							2	2							300	605-708	



Table 6. Silurian-Devonian aquifer, public water supply wells (con't)

County	Pumping facility	Population (pop./yr)	Average daily pumpage of facility (gpd/yr)	No. of wells	Well location (sec.,T/R)	Well depth (feet)	Well yield (gpm)	Remarks
Cook	Prospect Meadows Subdivision (N.of Mt. Prospect)	600/78	35,050/78	1	27,42N-11E	201	175	
	Richton Park	2,558	753,000/79	2	27,33,35N-13E	418-439	500-800	
	Sauk Village	7,479	811,000/77	2	25,35N-14E	470-474	660-1000	
	Schaumburg	18,730	* 5,306,000/78	7	12,13,20,21, 24,28,32 41N-10E	206-390	250-700	See tables 1 & 13
	S. Chicago Hts.	4,923	* 789,000/78	2 (1)	29,33,35N-14E	250-493	500-700	See table 13
	Steger (Will County)	8,104	840,000/77	1	33,35N-14E	378	550	See table 6 (Will County)
	Western Springs			(2)	5,38N-12E	313-364	250-500	See table 13
Douglas	Wheeling	13,243	* 1,800,000/78	3	10,11,12 42N-11E	200-281	200-400	See table 13
	Villa Grove	2,605	207,000/76	2	10,16N-9E	627-645	250	
DuPage	Addison	24,482	* 4,500,000/77	4	19,28,33, 40N-11E	155-250	300-1000	See table 13
	Belmont-Highwood Public Water District	581/79	58,000/79	2	12,38N-10E	148-295	400-500	
	Black Hawk Hts. Subdivision (near Westmont)	1,015/77	66,700/77	1	10,38N-11E	295	200	



Table 13. Public water supply wells open to multiple aquifers (con't)

County  Pumping facility	Population (pop./yr.)  Average daily pumpage (gpd/yr)	Location (Sec,T/R)	No. of wells	Aquifers												Minor aquifers			Well yield(s) (gpm)	Well depth(s) (ft.)	Remarks																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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